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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,859	03/17/2004	Kohei Sakurai	056208.53362US	1981

23911 7590 02/25/2008

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EXAMINER	
BEHNCKE, CHRISTINE M	
ART UNIT	PAPER NUMBER
3661	

MAIL DATE	DELIVERY MODE
02/25/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/801,859	SAKURAI ET AL.	
	Examiner	Art Unit	
	CHRISTINE M. BEHNCKE	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/10/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to the Amendment and Remarks filed 6 December 2007, in which claims 1-9 were presented for examination.

Response to Arguments

Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakurai, US 2002/0029098.

(Claim 1) Sakurai describes an electronic control unit for automobiles comprising: a microcomputer for operating a control signal for controlling a state of an automobile on the basis of an input signal from a sensor ([0035]); and an output driver circuit for driving an actuator by said control signal obtained by said microcomputer ([0013]); wherein said output driver circuit is composed of a driver IC into which power transistors in correspondence to a plurality of channels, a serial communication interface for executing serial communication with said microcomputer ([0038]), and a timer circuit for generating at least one of a pulse width modulation signal and a pulse signal for said power transistors are integrated ([0044]); and wherein said timer circuit, on the basis of

said control data signal received from said microcomputer by said serial communication interface, generates at least one of said pulse width modulation signal and said pulse signal ([0044] and [0050]).

(Claim 2) Sakurai further describes wherein said microcomputer supplies a clock signal for timer count to said timer circuit built in said driver IC ([0050]); and said timer circuit, on the basis of a control data signal for setting the frequency and duty of the pulse width modulation signal transmitted from the microcomputer, generates a pulse width modulation signal ([0044] and [0050]).

(Claim 9) Sakurai describes an output driver circuit for driving an actuator by a control signal obtained by a microcomputer for operating said control signal for controlling the state of an automobile on the basis of an input signal from a sensor ([0035]), wherein said output driver circuit is composed of a drive IC into which power transistors in correspondence to a plurality of channels, a serial communication interface for executing serial communication with said microcomputer ([0013], [0038]), and a timer circuit for generating at least one of a pulse width modulation signal and a pulse signal for said power transistors are integrated ([0044]), and wherein said timer circuit, on the basis of a control data signal for setting output start timing and output end timing or output start timing and pulse width of said pulse signal transmitted from said microcomputer, generates a pulse signal ([0044] and [0050]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai in view of Tazawa, US 4,989,150.

(Claim 3) Sakurai describes an electronic control unit for automobiles comprising: a microcomputer for operating a control signal for controlling a state of an automobile on the basis of an input signal from a sensor ([0035]); and an output driver circuit for driving an actuator by said control signal obtained by said microcomputer ([0013]); wherein said

output driver circuit is composed of power transistors in correspondence to a plurality of channels, a serial communication interface for executing serial communication with said microcomputer ([0038]), and a driver IC which is a semiconductor circuit having integrated timer circuits for generating a pulse width modulation signal and a pulse signal ([0044]); and said timer circuit, on the basis of said control data signal received from said microcomputer by said serial communication interface, generates said pulse width modulation signal and said pulse signal ([0044] and [0050]); and wherein said microcomputer supplies a clock signal for timer count to said timer circuit built in said driver ([0050]). Sakurai further describes generally that the microprocessor supplies signals to the timer circuit to generate the pulse width modulation and pulse signal ([0050]), but does not specify that the microprocessor send the engine rotation synchronized signal.

However, Tazawa teaches an injector diagnosis system for a vehicle that wherein the driver circuit is not separate from the ECU, but that the ECU supplies an engine rotation synchronized signal generated on the basis of a clock signal for timer count and signals of a crank angle sensor and a cam angle sensor to a timer circuit (column 4, lines 11-22), and the timer circuit generates, on the basis of a control data signal received from the ECU by the serial communication interface, generates the pulse width modulation signal and pulse signal (figure 1).

(Claim 4) Tazawa further describes wherein the engine rotation synchronized signal is a pulse signal indicating that the piston of each cylinder of the engine is

positioned at a specific reference point and the pulse width of the signal depends on the cylinder number (column 4, lines 66-column 5, line 7).

(Claim 5) Tazawa further teaches wherein the timer circuit, on the basis of a crank angle sensor signal and a cam angle sensor signal which are input to said timer circuit, discriminates the position of each cylinder of said engine and on the basis of a control data signal for setting the frequency and duty of said pulse width modulation signal transmitted from said microcomputer, generates a pulse width modulation signal (column 4, lines 11-22).

(Claim 6) Tazawa further teaches wherein said timer circuit built has a register for storing a specification for pulse patterns of said crank angle sensor signal and said cam angle sensor signal (column 3, line 63-column 4, line 10).

(Claim 7) Tazawa further teaches wherein said driver IC additionally has an integrated A-D converter, converts a sensor signal to a digital signal by said A-D converter, and transmits a conversion result to said microcomputer via said serial communication (column 3, lines 20-35).

(Claim 8) Tazawa further teaches that in addition to the driver IC, an A-D conversion IC composed of an A-D converter and a serial communication interface, wherein an A-D conversion result by said A-D converter is transmitted to said microcomputer via said serial communication (column 3, lines 20-35 and column 7, lines 10-29).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system of Sakurai with the teachings of Tazawa because

Tazawa teaches the method of controlling the specified actuators of the engine cylinders was well known, this way does not change by the separation of the driver circuits from the ECU, as described by Sakurai.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTINE M. BEHNCKE whose telephone number is (571)272-8103. The examiner can normally be reached on 8:30 am- 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CMB

/Thomas G. Black/ Supervisory Patent Examiner, Art Unit 3661